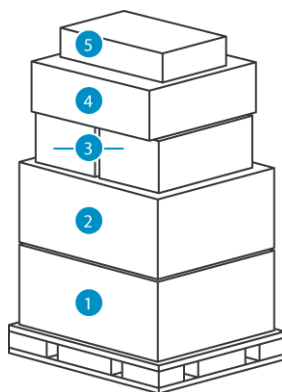# HP StorageWorks Enterprise Modular Library E-Series 71e Getting Started

1 Unpack the library

Identify the contents of each box. Save the packaging materials for use in moving or shipping the library in the future.

1. 8U base module & mounting hardware

2. 4U base module & mounting hardware

3. Tape drives

4. Robot

5. Switch for internal network (in libraries with LTO4 or LTO5 tape drives only)

⚠ CAUTION:

Parts can be damaged by electrostatic discharge. Keep parts in their containers until needed. Ensure that you are properly grounded when touching static-sensitive components.

## 2 Prepare the rack

⚠ WARNING!

Consider the library's weight and the weight of the other components in the rack when deciding where to place the library in the rack. Failure to do so might cause the rack to become unstable and tip over. Place heavier components like servers and disk arrays at the bottom of the rack. Place the library and other lighter components above the heavier components.

1. Lock the rack wheels or insert wheel chocks under the wheels to prevent the rack from moving during installation.
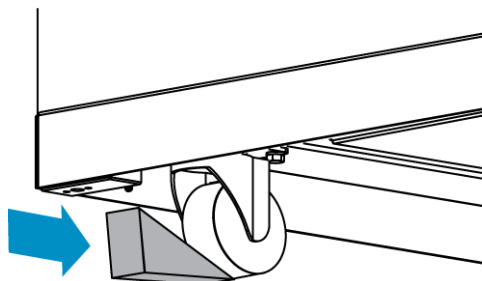
2. Use the template shipped with the library to mark the front and back of the rack with the locations of the mounting hardware.

If your library contains LTO4 or LTO5 tape drives or if you plan to add them later, leave an additional 1U of space above the template in which to install the switch. HP recommends that you leave 2U of space above the library for future expansion, if possible.
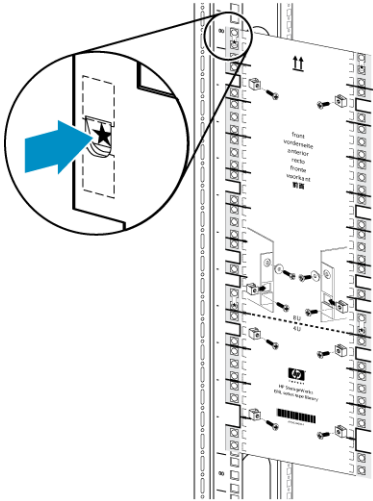

3. At the front of the rack, install six clip nuts at the locations indicated on the front of the template. Also install one clip nut in each rail.
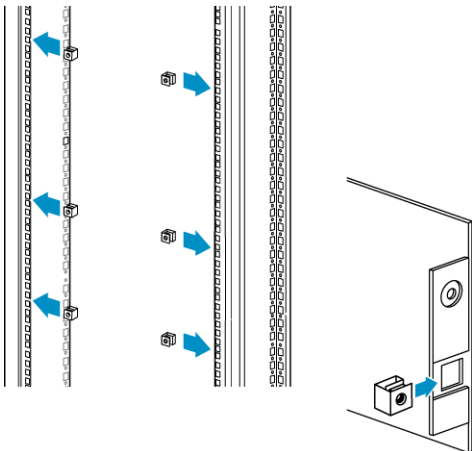
4. At the rear of the rack, install four mounting brackets at the locations indicated on the back of the template. Use two T-15 flathead screws and washers in each mounting bracket.
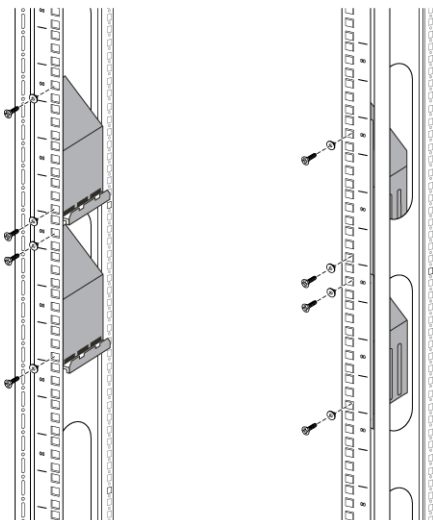
5. For the top mounting brackets, place a rail on top of each mounting bracket. At the front of the rack, attach the rails at the locations indicated on the front of the template. Use one T-15 flathead screw and washer in each rail.
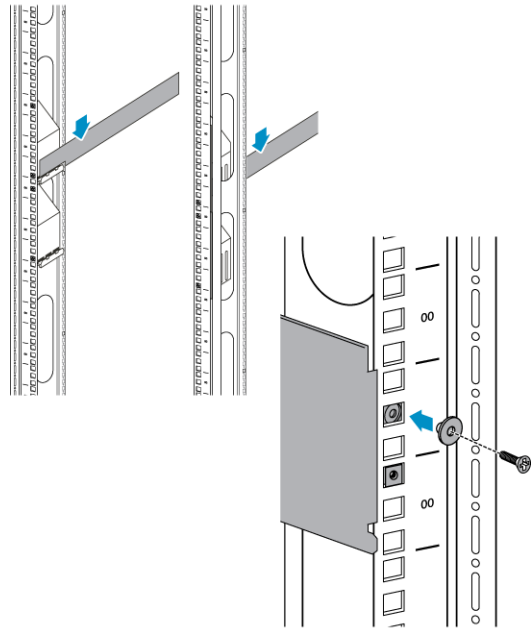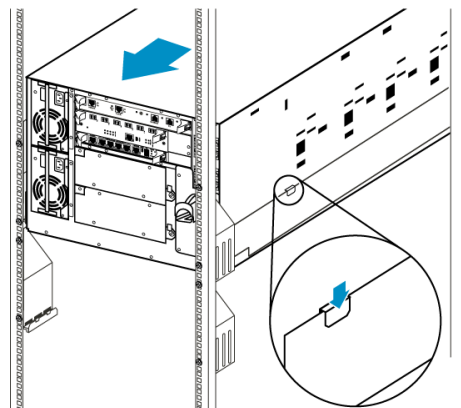

3 Install the 8U base module

⚠ WARNING!

The 8U base module weighs 27 kg (60 lb). Use two people and a cart, tabletop, or mechanical device to lift, position, and secure the 8U base module.

1. Using two people, lift the 8U base module into position in the rack. The two tabs on each side of the 8U base module fit over the rails. Slide the 8U base module half way into the rack.


📝 NOTE:

Your library might look different.

2. At the rear of the library, guide the notches on the bottom corners of the 8U base module onto the mounting brackets. Slide the 8U base module completely into the rack.
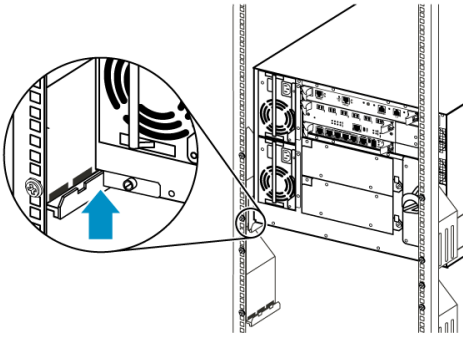
> 📝 NOTE:
>
> Your library might look different.

3. At the front of the library, turn the center-door knob onequarter turn counterclockwise and open the center door of the library.
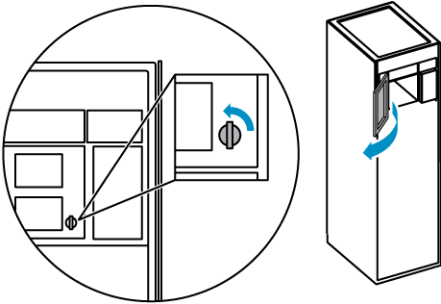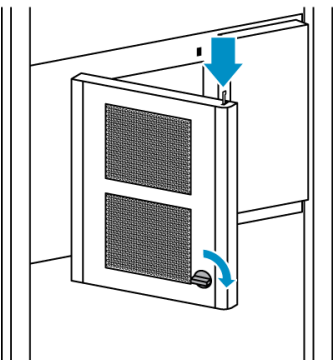

4. Keep the center door open and turn the center-door knob one-quarter turn clockwise to lower the door locking lever on the top of the door.
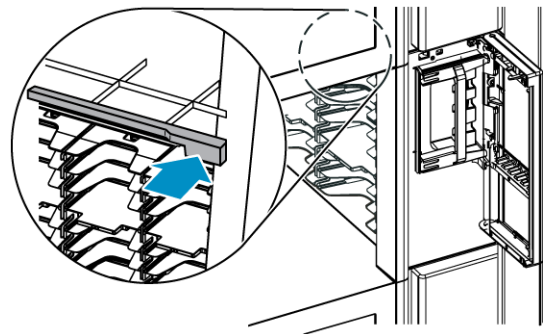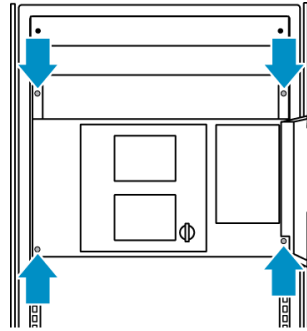
> ⚠ CAUTION:
>
> The door locking lever must be down before you install the robotics unit.

5. Open the load port door on the 8U base module. Inside the front of the library, press the load port door latch to open the load port door.

6. Attach the 8U base module to the front of the rack with four T-25 panhead screws.

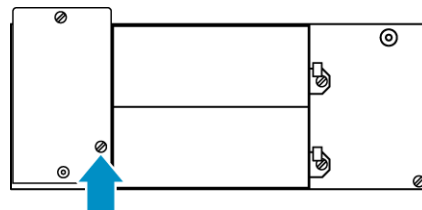

7. Close the load port door on the 8U base module.
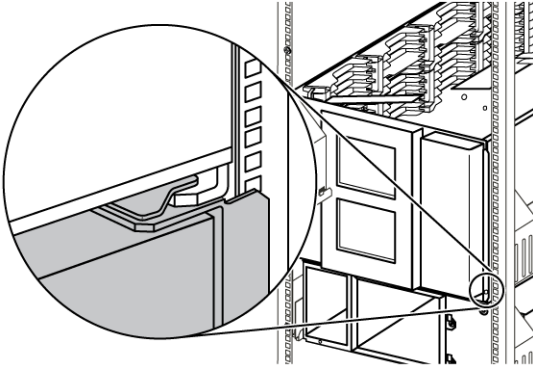
4 Install the 4U base module

> ⚠ WARNING!
>
> The 4U base module weighs 12 kg (27 lb). Be careful when lifting. Use a cart, tabletop, or mechanical device to lift, position, and secure the module.
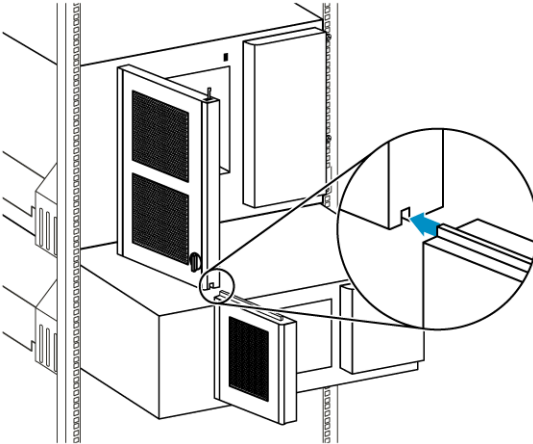
1. Remove the cover from the left side of the 4U base module. To remove the cover, loosen the bottom thumbscrew.

2. Lift the 4U base module into position in the rack. The top of the 4U base module has rails on each side that fit into the L-flange of the module above. The right rail is longer than the left rail, and will engage first, making the left side heavier until the module is completely on both rails. Starting with the right side, place the 4U base module on the L-flange of the 8U base module and slide it until it is half way into the rack.


3. Open the center doors on the two modules. Align the tongue of the lower door with the groove in the upper door. Carefully slide the 4U base module into the rack until the doors are engaged.

4. At the rear of the library, guide the notches on the bottom corners of the 4U base module onto the mounting brackets. Slide the 4U base module completely into the rack.
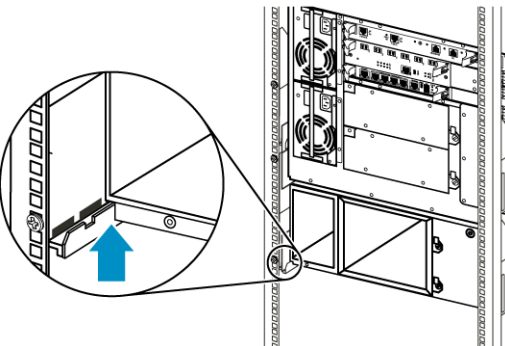
5. At the front of the library, remove the 4U blank cover from the 4U base module. Push down and pull the top of the 4U blank cover away from the front of the library. Lift the cover off.
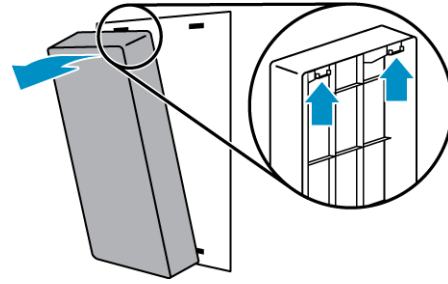
6. Attach the 4U base module to the front of the rack with four T-25 panhead screws.
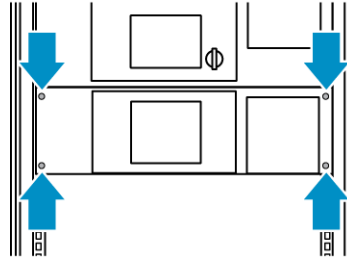
7. Attach the faceplate of the 4U base module to the faceplate of the 8U base module with two 6/32 x 1/4-inch Torx screws.

⚠ CAUTION:
> Use the correct length screw for this step. The robot will hit a longer screw when it descends.

8. Replace the 4U blank cover on the 4U base module.

5 Plug in the OCP cables

1. Remove the two T-10 Torx screws from the bottom-left and top-right corners of the black protective cover that is on the back of the Operator Control Panel (OCP).
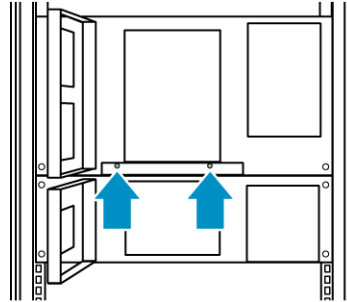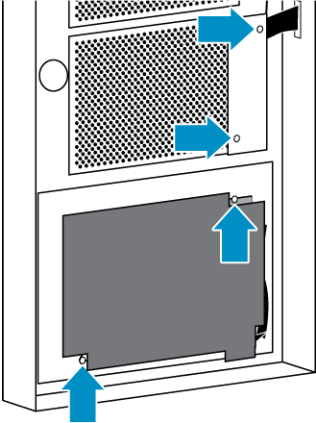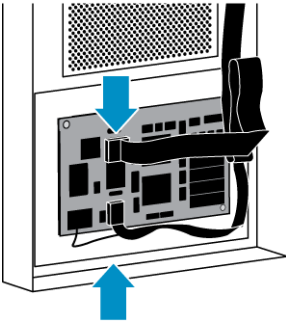

2. Remove the two T-15 Torx screws from the metal cover on the upper door to access the cables.

3. Plug the two ribbon cables into the back of the OCP.

4. Fold the cables so they fit under the covers. Replace the metal cover and the black protective cover.

6 Insert the lift pole

Inside the front of the library, insert the lift pole onto the pole mount at the lower left corner of the back wall of the 4U base module. Press down on the pole until the top of the pole slips into the pole mount in the 8U base module above it.
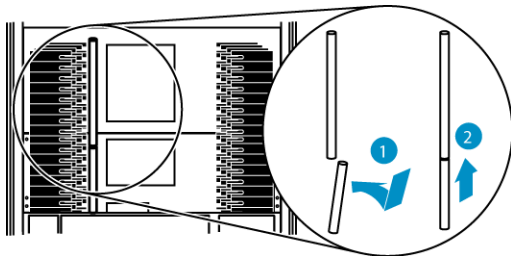
7 Plug in the inter-module power cable

1. Remove the two bottom arrays from the back column of arrays on the right wall. (You are removing one 6-slot array from the 8U base module and one 6-slot array from the 4U base module.) To remove an array, press its release lever and lift up on the array.
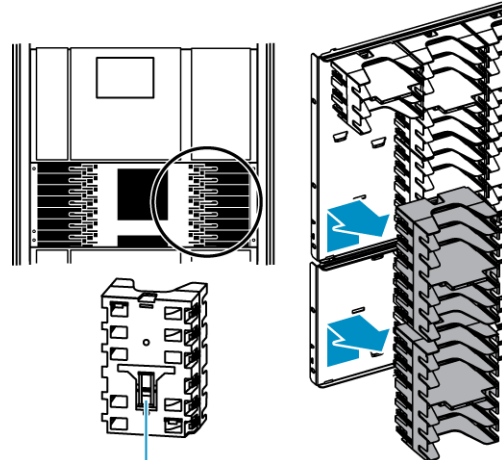
2. Plug in the two ends of the power cable.

⚠ WARNING!

Before doing this step, make sure the main power switch is Off and the 8U base module is not plugged in.
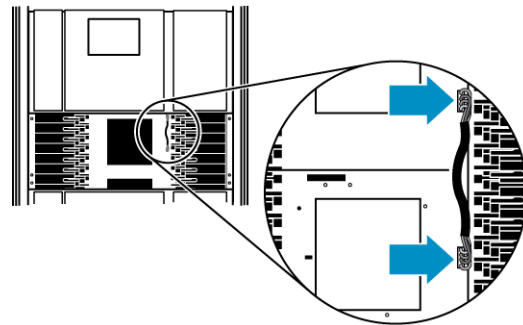
3. Replace the arrays inside the library.

8 Plug in the interconnect cable

1. At the rear of the library, loosen the thumbscrew and remove the cover from the bottom-left corner of the 8U base module.

2. Pull the ribbon cable out of the 8U base module. Plug the ribbon cable into the 4U base module.

3. Install the cover from the 4U base module onto the two modules. Tighten the two thumbscrews to secure the cover.

9 Install the robotics unit

⚠ WARNING!

The robotics unit weighs 11 kg (25 lb). Be careful when lifting. Use a cart, tabletop, or mechanical device to lift, position, and secure the module.

1. Remove the shipping restraints. Put the robot upside down on a table. Remove the two shipping straps from the slots on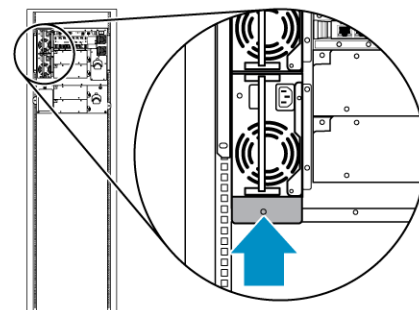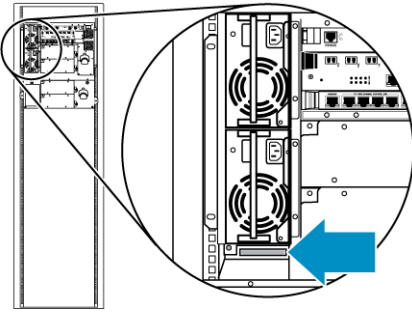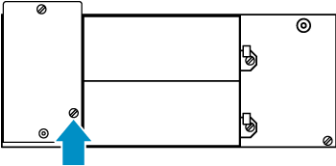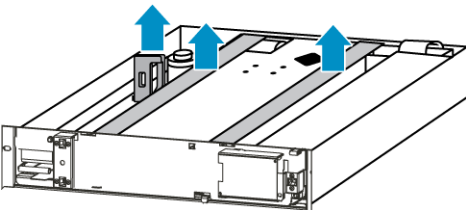 the front and back of the robotics unit. Store the shipping straps with the other packaging materials. Pull up on the yellow gear lock to disengage it from the reduction gear. The gear lock remains attached to the robotics unit.

2. At the front of the library, insert the robotics unit most of the way into the top of the library. Push the latch on the door of the robotics unit to the right and open the door. Push the robotics unit the rest of the way into the library.
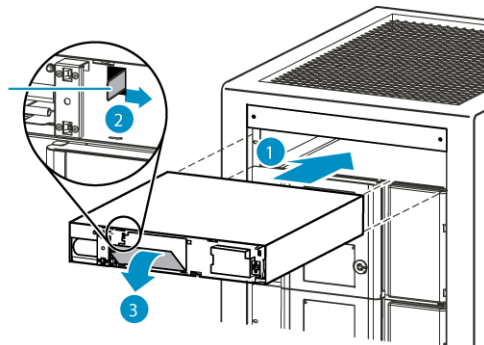
3. Make sure the latch on the right side of the robotics unit is fully engaged. If it is not, push the latch to the right. You should not be able to move the robotics unit. Close the door of the robotics unit.
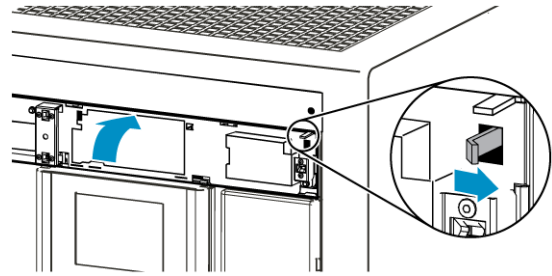
4. Make sure the robotics unit is properly installed:

- The guide rail fits into the alignment slot.
- The tabs on the bottom of the door of the robotics unit are behind the faceplate.
- The latch on the door of the robotics unit is fully engaged and secure.
- The latch on the right side of the robotics unit is fully engaged and you cannot move the robotics unit.
- The ratchet tool on the upper-right corner of the robotics unit is pushed in completely.
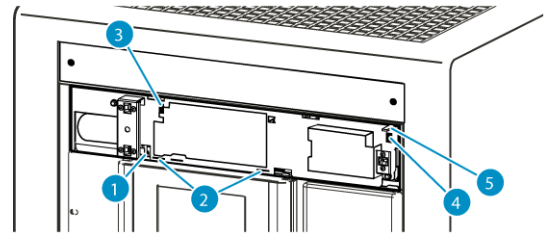
1. Guide rail in alignment slot	2. Tabs on door
3. Latch on door	4. Latch on right side of robotics unit
5. Ratchet tool	

5. Push the cover onto the robotics unit.
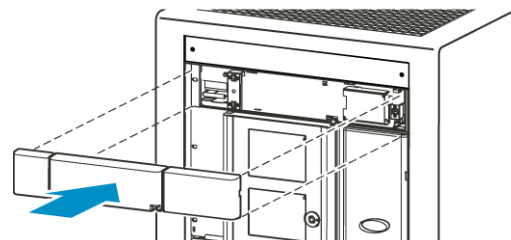
10 Install the switch for the internal network

⚠ CAUTION:

Do not connect this switch to your local LAN. It is for internal library communication only. Connecting this switch to a LAN could cause library components to perform incorrectly or report failures.

1. Attach the brackets to the switch.

2. Connect the power cable to the power socket on the back of the switch.
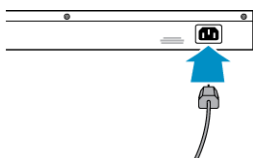
3. At the rear of the library, install two clip nuts in the center hole of the 1U location above the robotics unit.
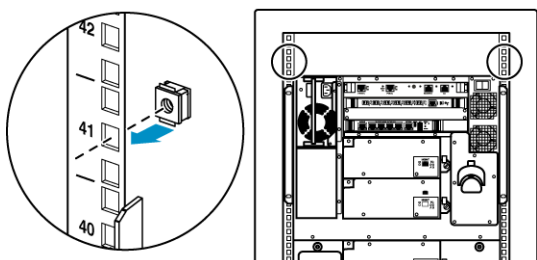
4. Insert the switch into the library. Attach the switch to the rack with the screws.
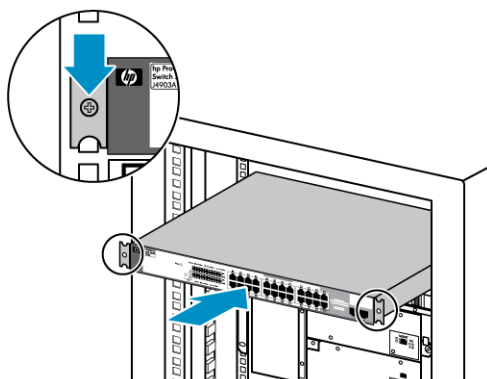
5. Route the power cable and plug it into a power strip.
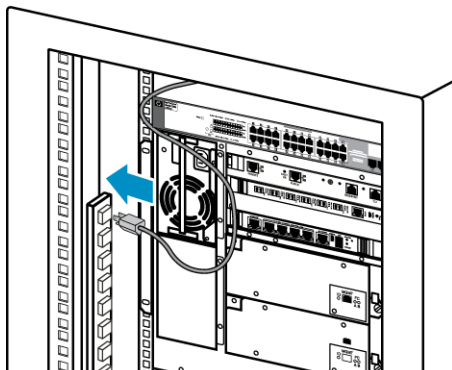
11 Install the tape drives

📝 NOTE:

HP recommends that you install tape drives from top to bottom with no gaps between them.

At the rear of the library, insert a tape drive into an empty drive bay. Tighten the thumbscrew to attach the tape drive to the drive bay. Repeat for each tape drive.
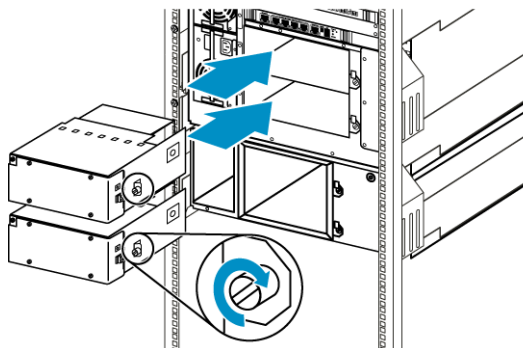
📝 NOTE:

Your library might look different.

12 Install the cable management features

1. Attach the two cable management features with T-25 Torx screws.
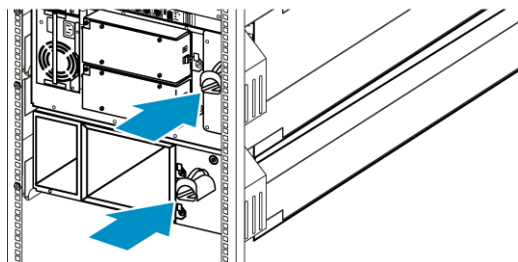
2. Attach the cable clamps to the right rear rack at the positions 37T, 26T, and 15T. Use these cable clamps to route the tape drive Ethernet cables.
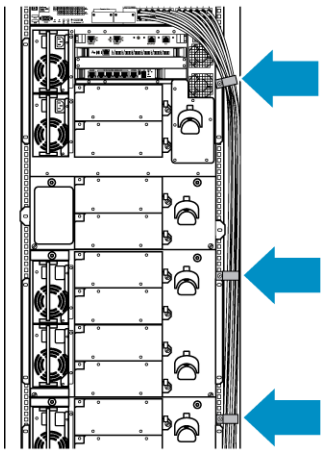
13 Connect the cables

⚠ CAUTION:

To avoid damaging Fibre Channel (FC) cables, do not pinch or sharply bend the cable tighter than a 5-centimeter (2-inch) diameter. Allow a radial bend when attaching an FC cable to a cable clip.
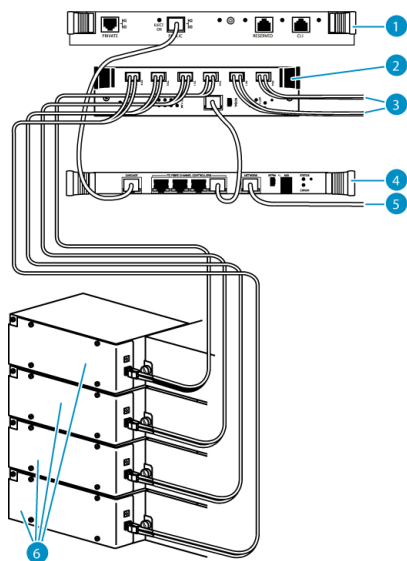
1. Library robotics controller	2. e2400-FC 4Gb interface controller
3. To hosts	4. Interface Manager card
5. To management station, via customer LAN	6. Tape Drives

Figure 1 e2400-FC 4Gb cable connections

1. Switch for the internal network	2. Library robotics controller
3. e2400-FC 2Gb interface controller	4. To host
5. Interface Manager card	6. To management station, via customer LAN
7. Port A to SAN	8. Tape drives
9. To port 1 on the switch	10. To port 2 on the switch

Figure 2 e2400-FC 2Gb cable connections

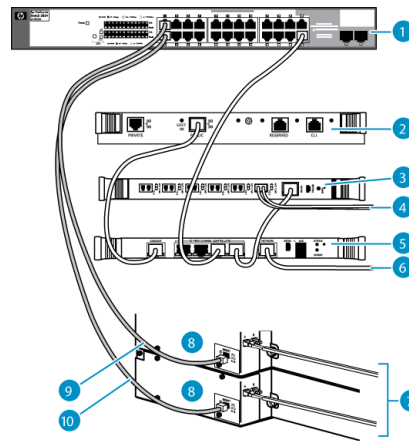Make the following connections. Attach labels to the ends of each cable.

- **LTO3 tape drives only:** Plug an FC cable (included) into the FC port on a tape drive and into a TD# port on the interface controller (middle card in the card cage). Repeat for each tape drive.
- **LTO4 and LTO5 tape drives only:** Plug an FC cable (included) into the FC Port A on a tape drive and into the SAN. Repeat for each tape drive.
- **LTO4 and LTO5 tape drives only:** Plug an Ethernet cable from the MGMT port on the tape drive to the switch for the internal network. Plug in the tape drives in order starting with the top tape drive going to port 1 on the switch.
- **LTO4 and LTO5 tape drives only:** Plug an Ethernet cable from port 24 on the switch for the internal network to one of the TO CONTROLLER/DEVICE PORTS ports on the Interface Manager card (bottom card in the card cage).
- Plug an Ethernet cable (included) into the Ethernet port on the interface controller (middle card) and into the TO CONTROLLER/DEVICE PORTS port on the Interface Manager card (bottom card in the card cage).
- Plug an FC cable (not included) into the FC0 port on the interface controller (middle card) and into either the host bus adapter (HBA) port on a host or into an FC switch that is connected to the host.
- **LTO3 tape drives only:** If a second host is available, plug an FC cable (not included) into the FC1 port on the interface controller (middle card) and into the HBA port on the host or into an FC switch.
- Plug an Ethernet cable (included) into the CASCADE port on the Interface Manager card (bottom card) and into the PUBLIC port on the library robotics controller (top card in the card cage).
- Plug an Ethernet cable (not included) into the NETWORK port on the Interface Manager card (bottom card) and into the Ethernet port on your management station.

- Plug each power supply into a power strip (power cable included). Plug each power supply into a different power strip. You cannot plug the power supplies directly into the wall outlet.
- If it's not already plugged in, plug each power strip into the rack's power distribution unit (PDU). And plug the PDU into an AC outlet. If you have more than one power distribution unit (PDU), plug each PDU power cable into a different AC power circuit to establish re-dundancy.
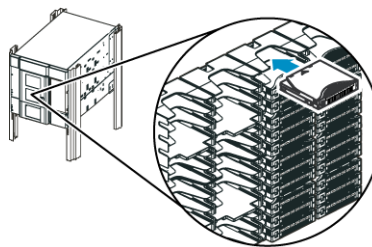

14 Attach the bar code labels to the tape cartridges

⚠ CAUTION:

Handle tape cartridges with care. Do not drop or mishandle them, or place them near sources of electromagnetic interference. Rough handling can damage the tape cartridge making it unusable and potentially hazardous to the tape drives.

⚠ CAUTION:

The misuse of bar code technology can result in backup and restore failures. To ensure that your bar codes meet HP's quality standards, always purchase them from an approved supplier and never print bar code labels yourself. For more information, see the order form provided with the library, as well as the *Bar Code Label Requirements, Compatibility and Usage* white paper available from http://www.hp.com/support.

Attach a bar code label to each tape cartridge. Place the bar code label entirely within the recessed area.

Labels:

LTO2
LTO3
LTO4
LTO5

11657
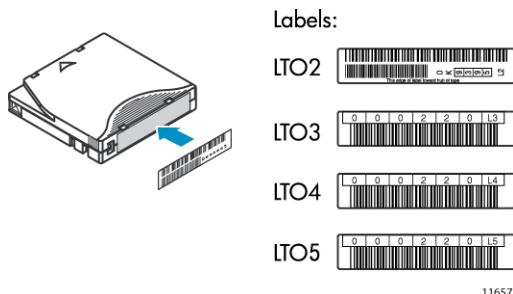
15 Insert the tape cartridges into the slots

⓵ IMPORTANT:

Do not insert tape cartridges into the 4U base module.

At the front of the library, insert the tape cartridges into the slots on the side walls inside the 8U base module.

16 Power on the library

1. Keep the center door of the library open and turn the center-door knob one-quarter turn counterclockwise to raise the door-locking lever that is on the top of the center door.
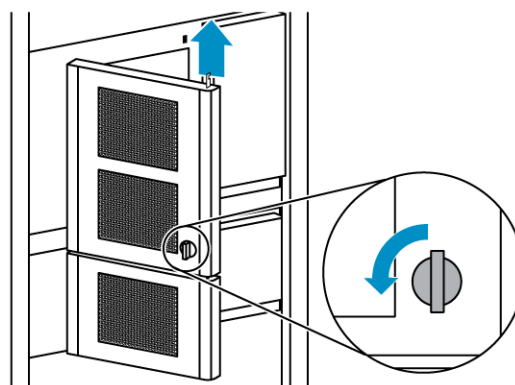
2. Close the center door of the library and turn the centerdoor knob one-quarter turn clockwise to lock it.
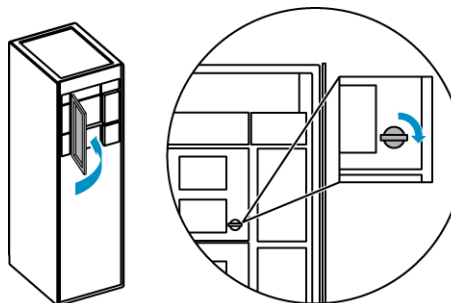
3. At the rear of the library, turn on the main power switch.
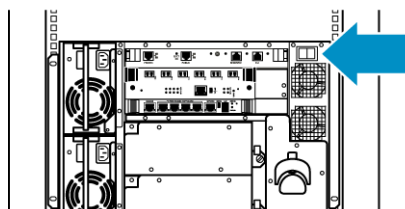
📝 NOTE:

Your library might look different.

17 Initial Interface Manager card setup

If an IPv4 DHCP network is available and the fault LEDs are not illuminated, verify that the NETWORK port on the Interface Manager card is connected to that DHCP network for proper setup. Skip the rest of this step.

If the Interface Manager card does not have access to an IPv4 DHCP network during initial power up, the Interface Manager must be configured manually. The Interface Manager card will not enable or configure its eth0 or eth1 ports until it knows which type of library type it is installed in.

You will need a DB9 to 3-pin serial cable from the library accessory kit to configure the Interface Manager manually.

- Verify that the operator control panel displays an HP logo, that the robotic library controller (RLC) LED is flashing, and that the fault LED for each installed tape drive is illuminated. The LEDs will remain illuminated until the Interface Manager card is set up.

- Plug the 3-pin connector of the DB9 to 3-pin serial cable into the SERIAL port on the Interface Manager card. Plug the DB9 end of the cable into the serial/COM port of a server or laptop.

- From the computer, open a terminal session to the Interface Manager card using the following terminal configuration settings:

Attribute	Setting
Baud Rate	Autoband, 9600
Data bits	8
Stop bit	1
Parity	None
Flow control	None

- Once the computer has established a serial connection to the Interface Manager card, log in with the user name admin and password admin.

- Note the Interface Manager firmware revision by executing the command `show firmware revision`, and the system date and time by executing the command `show mgmt clock`.

  If the IM is running firmware l232 or previous, enter service mode to continue; otherwise, skip this step. To enter service mode, type `service` at the CLI prompt and enter the current service password. If the date on the IM is still set to 1/1/2001, use password 3FV6Y043FAUV8N.

- Execute the command `set network config eml`

- Wait until the RLC and drive fault LEDs are no longer illuminated and the library starts to initialize. If the RLC fault LED is flashing after five minutes, turn off the main power switch. Wait several seconds and then turn on the main power switch again.

- When the RLC fault LED is not longer flashing, both Ethernet ports on the Interface Manager card should be properly configured and you can continue to set up the network.

- Configure the IP settings:
  - If using IPv4, use either the library operator control panel or Interface Manager card serial connection to configure the static/manual IP address settings.
  - If using IPv6, use the library operator control panel or Interface Manager command line interface (CLI) to enable IPv6. Once IPv6 is enabled, use the Interface Manager CLI to configure IPv6 basic settings.

NOTE:

If the library is only connected to an IPv6 network, the Interface Manager card and library firmware versions must support IPv6. If the Interface Manager card or library firmware versions do not support IPv6, connect and configure the library and Interface Manager card to an IPv4 network, update the firmware, and then connect and configure the library and Interface Manager card for IPv6.

18 Configure the interface controller

If this is the first time the library has been powered on after delivery, or if a new interface controller was installed, configure the interface controller so that it is recognized by the Interface Manager card.
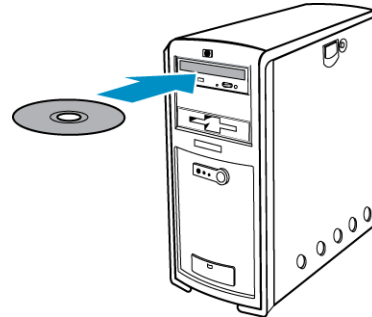
Wait several seconds and then turn on the power switch again.

NOTE:

The library requires up to fifteen minutes to initialize and perform an inventory. While the library is performing an inventory, continue with the next step.

19 Install the software

1. Install HP StorageWorks Command View TL on the management station. Install this software from the included CD.

2. Install HP StorageWorks Library and Tape Tools (L&TT) on the management station. Download this software from http://www.hp.com/support/tapetools.

20 Configure the library

After the inventory completes, use the touch screen (called the Operator Control Panel or OCP) on the front of the library to configure the library. Perform the following commands:
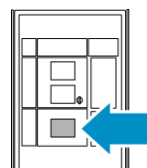
- `Configuration > Library Configuration > Change Password`

The library ships with a null password. Passwords must be set to exactly eight characters consisting of the numbers 0 through 9 and the period character.

- `Configuration > Library Configuration > Configure Load Ports`

  This command shows the number of installed load ports and enables you to toggle between using each for import/export or for storage. Configure it as a load port to move tapes in and out of the library. Configure it as slots to increase the number of storage slots in the library. Changing a load port configuration will cause a library reboot.

- `Configuration > Library Configuration > Change Network Settings`

  This configures the network settings for the Interface Manager card, which can be set automatically using DHCP (the default) or manually using a static IP address. Use the Address Config: button to toggle between these two options. If you are setting the network addresses manually, set each address element separately.

- `Configuration > Library Configuration > Configure Barcode Reporting Formats`

  This command defines how bar codes are displayed on the OCP and sent to the host. Bar code reporting can be configured as six to eight characters and left or right aligned. If you choose six characters with left alignment, any characters after the six are truncated. If you choose six characters and right alignment, only the last six characters are shown with the beginning characters truncated.

- `Configuration > Library Configuration > Configure Reserve Slots`

  Up to nine slots can be reserved for special purposes, such as cleaning tapes. The default is none. Select the number you want to reserve and press Save.

- `Configuration > Library Configuration > Configure Inventory Mode`

  This command allows you to require bar codes on tape cartridges, or to make them optional. Requiring bar codes significantly shortens inventory time.

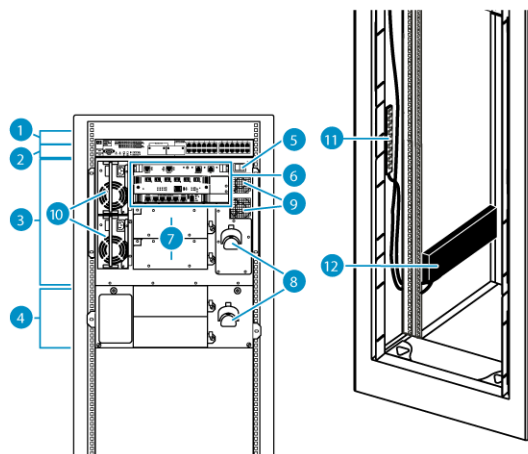# Identifying the parts of the library

1. Customer reserved space. If your library contains LTO4 or LTO5 tape drives, this space contains the switch for the internal network.

2. 8U base module

3. 4U base module
4. Robotics unit
5. Viewing windows
6. Operator control panel (OCP)
7. 5-Cartridge load port
8. 4U blank cover

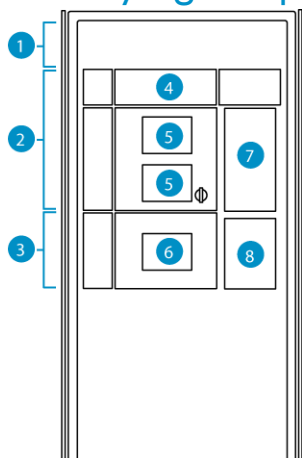|	
1. Customer reserved space	2. Switch for internal network (in libraries with LTO4 or LTO5 tape drives only)
3. 8U base module	4. 4U base module
5. Main power switch	6. Base module card cage (your card cage might look different)
7. Tape drives	8. Cable management features
9. Fans	10. Power supplies
11. Power strip	12. Power distribution unit (PDU)

Getting help

- HP product information
  http://www.hp.com/go/storage
- HP technical support and phone numbers:
  http://www.hp.com/support
- HP manuals:
  http://www.hp.com/support/manuals
- HP StorageWorks Library and Tape Tools (L&TT) diagnostic software:
  http://www.hp.com/support/tapetools
- Interface Manager and HP StorageWorks Command View TL:
  http://www.hp.com/support/cvtl